

Chapter 2 Equipment Requirements

2-1. General

Pumping stations designed and built by the Corps of Engineers are mostly part of a flood-protection project and, as such, are used during emergencies. Some stations may pump a combination of sanitary sewage and storm water. They are usually maintained and operated by local interests and may sometimes be manned by operators who are not technically trained. Therefore, the equipment installed in these stations should be highly reliable and, whenever possible, should be of a type and construction that will require minimum maintenance and be relatively simple and easy to operate. It is recognized, however, that large diesel engine drives require a great deal of maintenance and are quite complex to operate. Some stations will be located in a corrosive atmosphere, especially those located along an urban sewer. At these locations, proper equipment and material selection and proper station ventilation designs are critical to minimize the effects of the corrosive atmosphere. It is expected that some of the equipment will be more expensive than regular grades that are commercially available. Recommendations of local interest preferences should also be considered.

2-2. Design Life

Most flood-protection projects are built for a 50-year life. Pumping station equipment, however, is not available, or

it is not feasible to obtain equipment with a 50-year life. In general, the equipment selected should be built for the longest life span available. In some cases, it is necessary to do an economic analysis to determine the type of construction to use. Except for very special cases, a minimum design life of 35 years should be the guide to use for preparing specifications. Changes to the 35-year design life requirement should be fully documented in the Feature Design Memorandum. A general guide for budgeting on service life is found in ER 37-2-10, Appendix I.

2-3. Materials of Construction

The primary cause of equipment deterioration in pumping stations is idleness and associated moisture problems caused by this idleness. These conditions should be considered when preparing designs and specifications. The designer should give preference to those materials that require the least maintenance and have the longest life. Guide specifications covering the materials and construction considered best suited to meet the usual service conditions have been issued for various pumping station equipment. When applying the guide specifications to individual projects, modification of the specification provisions should be limited to those changes necessary for the operational requirements. Equipment problems caused by condensation and exposure to sewer gases in pumping stations used to pump sanitary sewage and storm water require additional corrosion resistant materials and sealants.